

### **REMARKS**

Claims 1 through 37 were pending in this application prior to this Amendment. Claims 1, 2, 3, 6, 8, 10, 21, 23, 27, 29, 32, and 37 have been amended. Claims 1 through 37 remain pending after this amendment.

Applicant respectfully requests reconsideration of the objection to the claims because the claims depend upon a following claim rather than a preceding claim. Applicant has amended the dependencies of the claims to correct certain obvious typographical errors, however it remains the case that certain lower number claims depend upon higher-numbered claims (specifically claims 2, 4, 5, 6, 8, 21, 23, 27, 29, 32, 33, 34, 35, and 36). Applicant respectfully submits that this is often the case after an amendment, the therefore requests that prosecution continue in the present form. However, if the Examiner would prefer, Applicant will cancel the existing claim set and replace it with an identical, but properly ordered claim set. Applicant has corrected the dependencies of claim 27 and 32, and apologizes for any inconvenience the numbering mistake may have caused.

Applicant respectfully requests reconsideration of the rejection of claims 1-37 under 35 USC 112, second paragraph. The Office Action states that the claims are confusing because of the language "group alterable charge" in claim 1. Applicant has amended this to "group of alterable charge" a term used in the parent application. Applicant apologizes for any inconvenience that this typographical error may have caused.

Applicant respectfully requests reconsideration of the rejection of claims 1-37 under 35 U.S.C. §103 as obvious over Dunn et al., U.S. Patent No. 5,200,334 in view of Reetz et al, U.S. Patent No. 6,080,402.

The Office Action states that "it would have been obvious to prepare the sol-gel glass of Dunn et al using a alkoxodisilane as obtained by Reetz et al when prepare a silica matrix." Claim 1 (and all the claims depending therefrom) requires a polymeric network having "a group of alterable charge, a hydrophobic group and a hydrophilic group". The Importance of the presence of the three groups is emphasized by the previously filed affidavit of Dr. Dave, wherein he points out that "the gel contains a group of alterable charge, a hydrophobic group, and a hydrophilic group. As a result, the gel -- and so the composite material -- responds to environmental changes of temperature, pH, solvent, salt, metal ions, chemical species, mechanical pressure, electrical potential, light, ultrasonic vibration, and so forth -- that is, the gel and composite material are 'smart.'" Dr. Dave when on to explain that "environmental responsiveness noted above is a characteristic of the gel itself. Therefore, for the composite materials to respond to changes in its environment -- that is, to be 'smart' -- the gel itself must contain the combination of groups noted above. The Office Action fails to establish that any combination of Dunn et al and Reetz et al has the required groups of alterable charge, hydrophobic group, and hydrophilic group.

Furthermore, as explained during the prosecution of U.S. Patent No. 6,756,217, claim 1 also requires that the network comprise an "alkoxosilane derivative". The alkoxodisilanes disclosed by Reetz et al are not a part of the resulting matrix or network of Reetz et al. The Reetz et al. alkoxodisilanes are precursors to the Reetz et al.

composite material. There is no indication in Reetz et al that the alkoxy group on the alkoxosilane precursor remains after the reaction to form the Reetz et al. matrix. As set forth in the previously submitted affidavit of Dr. Dave, the alkyl group of the alkoxy drops off as the alkoxodisilane hydrolyzes to form the Reetz et al, matrix. Furthermore, this is confirmed by Reetz et al. At col.1. line 64, to col. 2, line 17, Reetz et al, discusses the fact that the silicon compounds are indeed hydrolyzed. At col. 4, lines 4-7, Reetz et al, states that "In a variant of the process according to the invention, the Si-OH groups capable of condensation with gel formation are not generated by hydrolysis of Si-O-alkyl groups but rather by protonation of Si-O-metal groups." Thus even according to Reetz et al, the gel is formed by hydrolysis of Si-O-R such that the -R is removed. This is consistent with the mechanism shown in Reetz et al.

Because the references lack the required combination of "a group of alterable charge, a hydrophobic group and a hydrophilic group", they do not make the claimed invention obvious.

With respect to the remaining dependent claims, the Office Action states that "The limitations of the dependent claims would have been a matter of obvious choice within the skill of the art in view of the disclosures and references. Applicant respectfully submits that the dependent claims have requirements that are not shown or suggested either by the references, or by matters of obvious design choice. Applicant respectfully requests an explanation of how the elements in these dependent claims would have been obvious to a person of ordinary skill in the art.


Applicant respectfully requests reconsideration of the double patenting rejection over 6,756,217. The Office Action recognizes that the claims are not identical to the

pending claims, and Applicant respectfully submits that the claims are not obvious from each other. The claims in U.S. Patent No. 6,756,217 require that each of the group of alterable charge, the hydrophobic group and the hydrophilic group be part of the at least one alkoxosilane derivative. This is not a requirement of all of the claims of the instant application, and in view of the unpredictability of the art, is not obvious from the claims of the instant application. For this reason, Applicant requests reconsideration and withdrawal of the double patenting rejection.

#### CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (314) 726-7505.

Respectfully submitted,



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